Truth Efficiencies

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Today

- Efficiencies for lepton and jet cuts at the truth level for ttbar and Z' m = 0.7, 1, 1.5 TeV
- Cut on $|\eta| < 2.5$ and p_T
- Leptons: $p_T > 25$ GeV
- Jets have for A = {25, 40}, B = {15, 25} either:
  - 4 jets > A GeV
  - 3 jets > A GeV, 1 jet > B GeV
- First set are "our" standard cuts, second set are those used in the commissioning analysis

Leptons

		tt	0.7 TeV	1TeV	1.5TeV
p_T > 25 GeV	lepton	77%	81%	84%	88%
	neutrino	83%	85%	87%	91%
|η| < 2.5	lepton	92%	88%	91%	93%
	neutrino	88%	88%	91%	93%
p_T > 25 GeV & |η| < 2.5	**lepton**	**73%**	**73%**	**78%**	**84%**
	neutrin	**74%**	**76%**	**82%**	**86%**

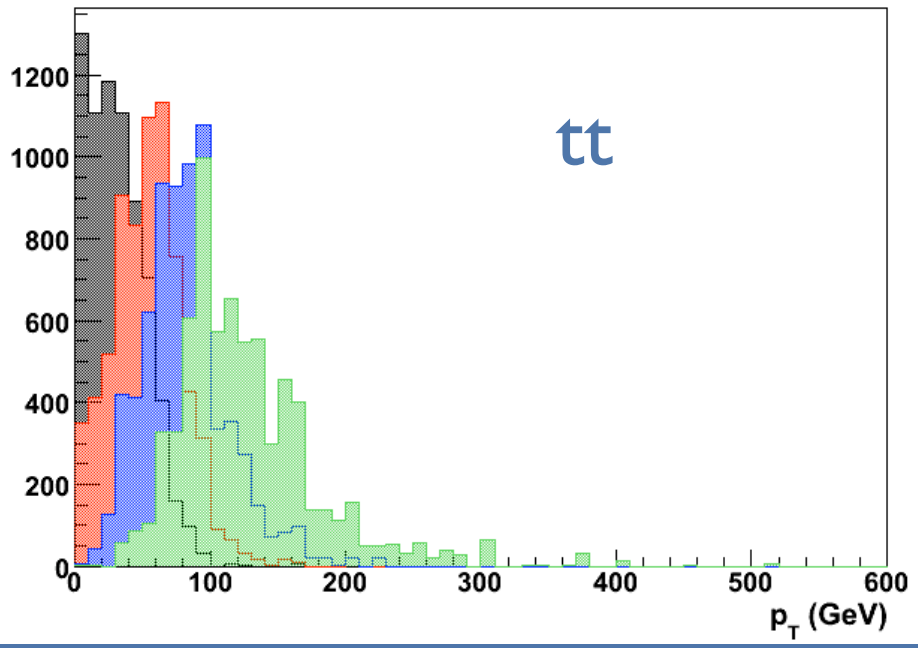
Neutrinos have higher p_T than leptons

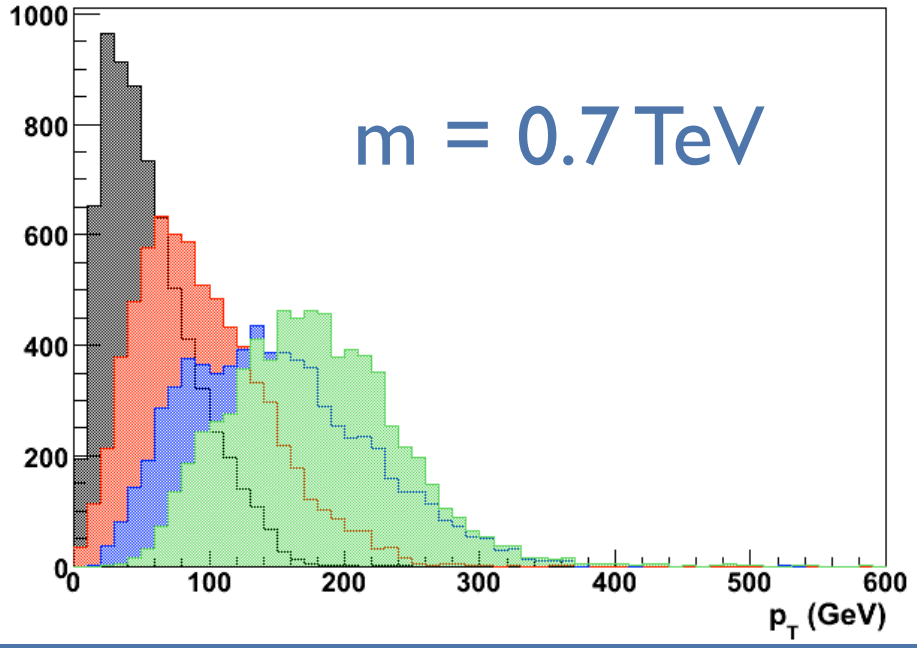
Partons

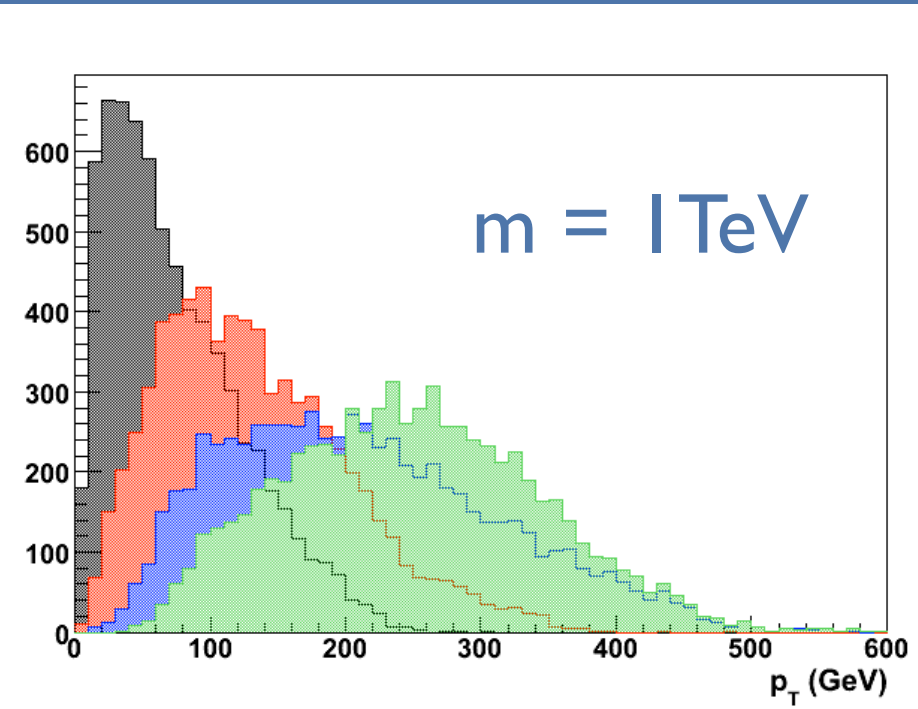
($|\eta| < 2.5$)

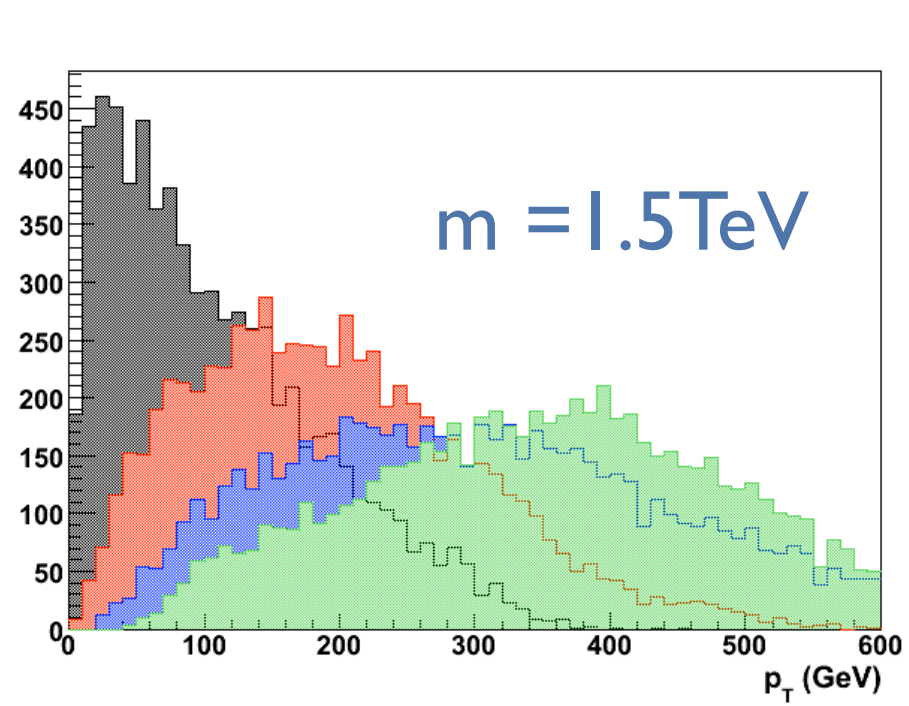
	tt	0.7 TeV	1 TeV	1.5TeV
η	54%	76%	82%	88%
all > 40 GeV	33% (23%)	61% (50%)	70% (61%)	78% (72%)
all > 25 GeV	58% (37%)	81% (65%)	85% (72%)	88% (79%)
1-3 > 40 GeV, 4 > 20 GeV	56% (36%)	81% (64%)	85% (73%)	89% (80%)
1-3 > 25 GeV, 4 > 15 GeV	72% (45%)	91% (72%)	92% (78%)	94% (83%)

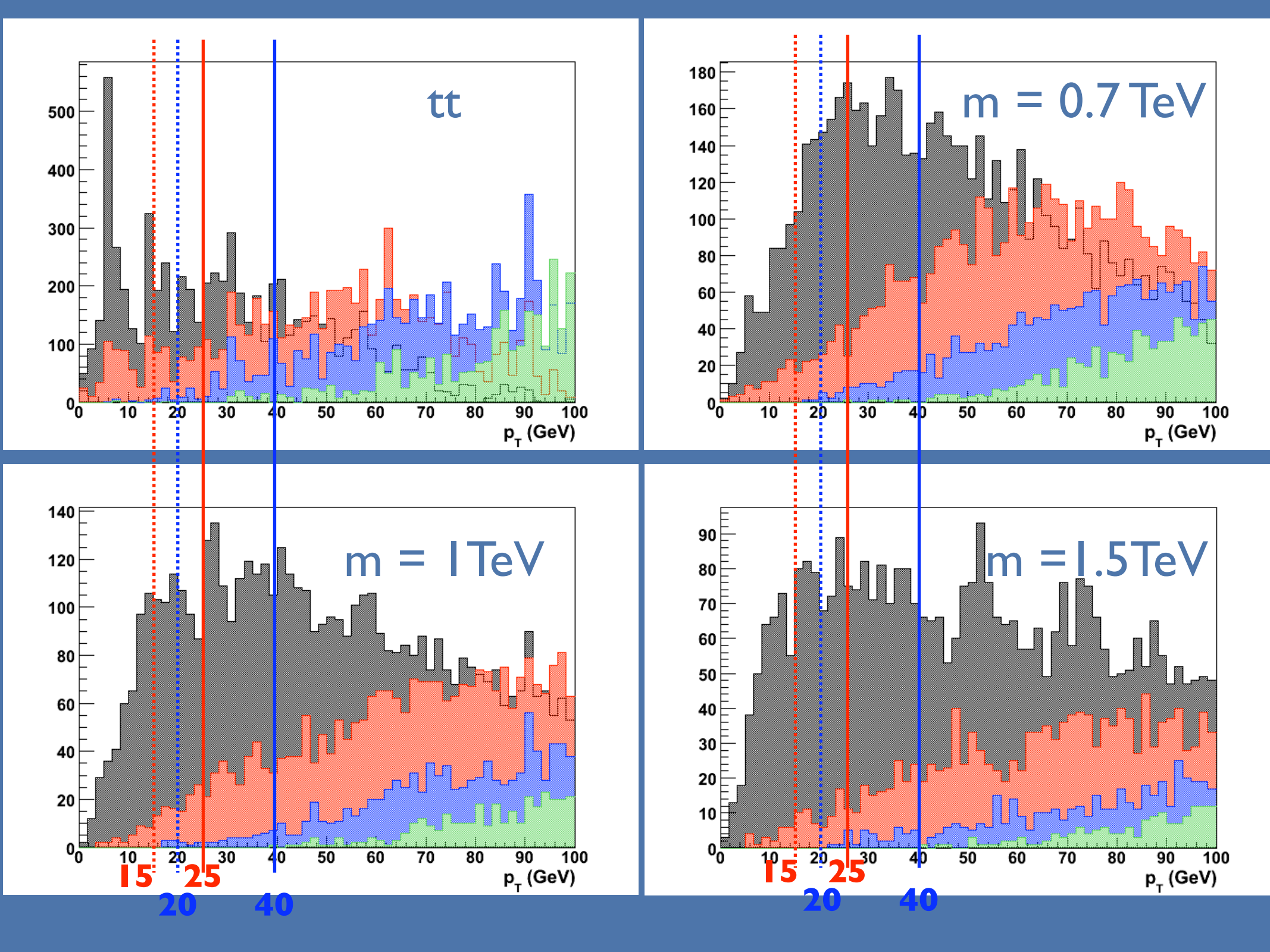
Parton p_T


tt
1200
1000
800
600
400
200
0
0
100
200
300
400
500
600
p_T (GeV)


m = 0.7 TeV
1000
800
600
400
200
0
0
100
200
300
400
500
600
p_T (GeV)


m = 1TeV
600
500
400
300
200
100
0
0
100
200
300
400
500
600
p_T (GeV)


m =1.5TeV
450
400
350
300
250
200
150
100
50
0
0
100
200
300
400
500
600
p_T (GeV)


tt
m = 0.7 TeV
m = 1TeV
m =1.5TeV
p_T (GeV)
15
20
25
40

Leptons + Jets

	Our cuts	Commissioning jets
tt	25%	20%
0.7 TeV	42%	38%
1 TeV	52%	49%
1.5 TeV	63%	60%

Commissioning analysis twiki:
http://tinyurl.com/2h2z4r

Conclusion

- All efficiencies increase with increasing mass
- Little correlation between different cuts
- We need a good choice of jet cuts
- Next: use ATLFAST to start looking at reconstructed data